SECURITY INFORMATION
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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

[redacted]

25X1

COUNTRY : USSR

SUBJECT : State Institute for Applied Chemistry (GIPKh Institute), Leningrad

25X1

PLACE ACQUIRED : [redacted]

DATE ACQUIRED [redacted]

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SUPPLEMENT TO REPORT NO.

THIS IS UNEVALUATED INFORMATION

25X1 [redacted] : [redacted]

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GIPKh Institute

1. In May 1947 the Chemistry Group was assigned to work at the State Institute for Applied Chemistry (GIPKh) in Leningrad, USSR. This Institute was attached to the Ministry of Chemical Industries and received the directives for its work directly from Moscow. [redacted] 25X1 [redacted] 25X1 25X1 [redacted] The German personnel continued to live in Sestroretsk

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FORM NO. 51-4F
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and commuted daily to Leningrad.

2. The GIPKh Institute is located on an island, not far from the Peter and Paul Fortress /see Enclosure (A), point 1/; the address is Vadni-Ostrov No 2. The Institute covered an area approximately 600 x 300 meters and, on the side away from the Neva River, was surrounded by a high barbed wire fence /see Enclosure (B)--Layout of the GIPKh Institute/. The buildings had previously housed a state brandy factory; [redacted] 25X1 many buildings were renovated or newly constructed. In 1950, approximately 1000-1200 people were employed at GIPKh (this number includes eight German technicians).

3. The Institute was divided into four main functional divisions /see Enclosure (C)--Organization Chart/:

   (a) General Research Laboratories (for chemistry and physics)

   (b) A Pilot Plant (in which most of the German technicians were employed)

   (c) A Drafting and Design Office (employed about 120 people)

   (d) The Plant Control Section [redacted] 25X1 which was divided into a series of workshops)

There were also some smaller units which were kept very secret
25X1 [redacted]

4. The Plant Control Section contained a large mechanical workshops, which by 1949 was well supplied with German tools and machines. In addition, there were: a large electrical workshop, a glass blowing shop, one installation for the production of compressed air and two boiler houses. [redacted] 25X1
25X1 a small room [redacted] to repair the measuring instruments which had been dismantled in Germany and brought to Leningrad. Most of these were standard instruments, for example: temperature recorders and regulators, quantity measuring instruments, pressure gauges and pressure regulators, density recorders and various instruments used for analyses. These instruments had been seriously damaged in transit to the USSR. They had merely been crated and shipped to Leningrad where they were distributed
25X1 somewhat at random. [redacted] section 25X1 was assigned ten hygrometers, whereas, there were only two of these instruments in the entire Leuna Plant. [redacted] modify 25X1 such instruments and put them to more general uses. [redacted] 25X1 noted, that as late as 1951, we found boxes containing critical instruments which had never been unpacked.

25X1 5. [redacted] task was keeping all instruments in good repair and supplying the laboratories with instruments that were needed.
25X1 At first [redacted] very little help from the Soviet workers who, by German standards, were very poorly trained. Slowly, however, they learned their trade and the work proceeded more smoothly. Occasionally, a very urgently needed instrument could be procured
25X1 directly from Germany. [redacted] case when a Soviet officer went back to Leuna and brought the desired instrument by plane.) By the middle of 1948, all the standard instruments used in large chemical installations were repaired, procured or constructed, and calibrated. By that time, due to the increased demands made on the Institute, the personnel [redacted] had increased 25X1
25X1 from the original staff of 15 to approximately one hundred. [redacted]
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Laboratory 579

6. This laboratory designed and operated a pilot plant for the synthesis of ethylamines from ammonia and ethyl alcohol. The Soviets planned to use the results of tests conducted in this laboratory in constructing a large chemical plant at Dzerzhinsk (50° 09' N - 27° 56' E). The Soviet personnel at Laboratory 579 included:

Servyelski	A chemistry student from Leningrad who directed research. He had previously worked in the SMA laboratory at Leuna.
Yerchov	Chief Technician and Servyelski's deputy.
Gennig	Technical Director.
Sklovski	Construction Engineer, who was apparently destined to be the constructor in charge of the Dzerzhinsk chemical plant.

Three German specialists at Laboratory 579 were:

Ing Ernst Otto	Directed construction.
Dr Chemistry Georg Peinze Dr Chemistry Karl Smeykal	Worked at Leuna in the production of amines until that section of the plant had been destroyed by bombing.

25X1 [redacted] laboratory consisted of procuring the measuring instruments and the switches. Occasionally [redacted] helped by William Lorenz who had been foreman at Leuna, and who was a specialist in this kind of installation. While in Leningrad, Lorenz had been attached to the KhIMGAS Institute. 25X1

7. This laboratory was equipped with standard pressure equipment brought from Leuna and which was designed for 250 atmospheres. The six contact ovens or reactors were made of N-8 steel. (This is high grade plated steel, very resistant to heat and pressure.) These reactors were more than one meter high and 90 mm in diameter. A sleeve or lining of V-4-A steel, V-2-A steel, or other suitable non-corrosive metal was put into these ovens which could be used under 250 atmospheres at temperatures as high as 500° C. This lining was 40-50 mm in diameter. There were two Hofer high pressure compressors which had been brought from Leuna. The laboratory had also set up two small distillation columns. Soviet safety engineers checked the German pressure tests before permitting operation of any high pressure equipment. Originally the Soviets had estimated that the installation and preliminary testing would take three months. Lack of proper materials and poor training of the Soviet personnel caused so many delays that almost two years had passed before this installation began to function in the spring of 1948. There were frequent discussions concerning these delays between a German engineer, Ernst Otto, and a Soviet engineer, Sklovski. [redacted] Early in 1948 Sklovski told Otto that the large plant being erected at Dzherzhinsk was about one year behind schedule. Sklovski complained in particular about some special pumps made at Dzherzhinsk which had failed to pass the tests; he was also annoyed because the foundations for these pumps had been made in a faulty manner--and that because of this failure, the entire installation was being held up. 25X1 25X1

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Peinze and Smeykal filled the ovens or reactors with the catalyst and then added the reactants which were liquids or gases. This was done in a room that was closely guarded. At first, experiments were made with pressures ranging between 50-250 atmospheres. Most of the work was done at 50 atmospheres. Mono-ethyl amine, di-ethyl amine and tri-ethyl amine were produced by reacting ethyl alcohol and ammonia over kaolin and water glass dehydration catalysts. The amount of liquid poured through the reactors was about 100 cubic centimeters per hour. The first tests were made with contact catalysts brought from Leuna. The later tests, made with Soviet catalysts, were very unsatisfactory. Many of the tests had to be repeated a number of times because of mistakes made by the poorly trained Soviet workers. In the beginning, this led to endless quarrels and disputes between the people engaged in research. [redacted] the tri-ethyl amine was the most satisfactory as a rocket fuel. Soviet engineer Gennig, who at first worked in this laboratory, was later assigned to work in the rocket fuel testing installation. 25X1

Laboratory 604 - Amine Fuels

9. This second research laboratory for amine fuels was entirely in the hands of the Soviets. The personnel included:

Servyelski	Research Director
Zarichev	Constructors and Technicians
Khakelson	Constructors and Technicians
Albitski	Constructors and Technicians
Krichevkov	Constructors and Technicians
Kolobev	Measuring Instruments

The equipment in this laboratory consisted primarily of pumps, reactors and salt removers. Some of these had been built by Ernst Otto. The processes used were different from those in Laboratory 579. The reaction was started in a coil, 30-40 meters long and which had an inner diameter of about 20 mm. This process had many technical drawbacks and repairs were very frequent. Approximately 100-200 liters of the solution went through the pipes daily. The pipes rarely lasted more than a few weeks and often only a few days, before they had to be repaired due to corrosion. Salt, deposited in the tubes, had to be removed with a special apparatus which was more often in repair than in use. [redacted] the measuring instruments in this laboratory--the instruments were serviced, after having been set up, by a Soviet, Kolobev.

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Laboratory 575 - Nitration

25X1 10. [redacted] the names of the following personnel employed in Laboratory 575:

Soviets:	Spak	Research Director
	Kvosiev	Chemistry student and technician
	Zaritchev	Constructor and technician
Germans:	Dr Gerhardt Geiseler	
	Dipl Ing Ernst Otto	

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For safety reasons, this laboratory had been built in a concrete room. The main equipment consisted of: containers of material, pre-heaters, reactors and coolers. The work was divided into two separate operations--one for liquids and one for gases. After a few explosions and unsuccessful experiments, the liquid phase nitration worked very well. The gaseous process was used in the nitration of methane with nitric acid and operated at a pressure of three atmospheres and at temperatures up to 430° C. The reaction took place in a pipe which was about five meters long and about 4 mm in diameter. After a few hours of operation, the reaction tubes were so heavily corroded that work had to be suspended. In order to decrease this heavy corrosion, all available materials for the reaction chambers were tried, but without success. [redacted] a gold-plated reactor, constructed by Otto, was set up [redacted] do not know the results. Most of the nitro-methane produced was tested and then used as a solvent in the laboratory. In addition to the corrosion element, the uniform addition of acid caused great difficulty; [redacted] heard that Otto was planning some new apparatus to solve this problem. [redacted]

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Laboratory 601

11. Gofman was the Soviet technician in charge of this installation, which consisted of four separate sections. [redacted] the many acid laboratories, which existed in the Institute [redacted] were torn down and replaced by these new installations in 1949-50. Judging from the instruments [redacted] the Soviet technicians were operating with some very corrosive products which may have been hydrofluoric acid, and the end product may have been freon.

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12. [redacted] in Laboratory 601, [redacted] a chemical process /see Enclosure (D)/; the nature of the end product is unknown [redacted] the final product may have been freon, [redacted] the Soviets mention that name, which was new [redacted] There was a supply of freon in the workshop of the Plant Manager and this supply was brought in from the vicinity of Laboratory 601. [redacted]

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There were three containers, A, B, and C, and four receivers, D. All containers and receivers had a capacity of about 40 liters each. [redacted] all of these containers were made of V-2-A material and that container B, a reactor, was lined with lead. A liquid from container A, heated electrically, was fed by gravity into reactor B. Another liquid, in steel container C, was vaporized by heating with water and steam. The vapors were passed into reactor B which was maintained at about 200° C by an electric heating coil. Reactor B was equipped with a 250° C thermometer and a metal float with an iron staff, about one meter long, attached. The level of the liquid in the reactor was indicated by a meter which recorded changes in a magnetic field caused by the movement of the iron staff into and out of that field. The reaction product distilled from the top of reactor B, and the vapors were condensed by passing them downward through a coil cooled to -27° C and collected in receiver D. When the reaction did not proceed properly, a white crystalline product formed in reactor B, and in the line between A and B, but never in the line between C and B. This deposit had to be melted with a blowtorch applied to the outside of reactor B. Sometimes the line between A and B was disconnected at B and the solid producted removed from

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25X1 it. [redacted] what this white crystalline product was,
25X1 nor [redacted] what the reactants and the final product were.
25X1 [redacted] cylinder C may have contained hydrofluoric acid or fluorine. The pressure gauge over this cylinder was rapidly corroded and the outside of the cover glass to the gauge was etched white in about two days and had to be discarded. [redacted] plexiglass for this use but it soon became cloudy and had to be discarded also. Rubbing the plexiglass with oil prolonged its usefulness slightly. The thermometer, used for holding the condenser coil at -27° C, was tested in freon. /Chemical handbooks give a boiling point of -28° C for difluorodichloromethane (freon)./ The corrosion in nearly all the equipment used in this process was very rapid. Valves and lines had to be repaired or replaced almost daily. Once a drop of liquid fell from an overhead pipe onto a worker's neck and the burn was so serious that it took six weeks to heal.

Other Installations of the GIPKh Institute

13. There were three other installations at the Institute [redacted] 25X1
25X1 [redacted] the following information about them:

(a) Rocket Fuel Testing Installation:

This unit was entirely Soviet-operated. Spak directed research; his assistants were engineer Gennig and some Air Force and Navy officers. Approximately 15 people were employed in this project which was housed in a concrete bunker on the banks of the Neva River.
[redacted] 25X1
particularly a pressure recorder, built with a scale 0-40 kg per sq cm and a chart speed of five seconds per rotation. A Siemens oscillograph was set up there in 1949. The tests which were conducted produced a swishing noise, like steam escaping through a valve, and varied in intensity. In some ways it sounded like an ordinary rocket used for fireworks. The noise lasted approximately four-five seconds. Sometimes, over half a dozen of these noises per hour could be heard for eight hours; on other days, there was no noise whatsoever.

(b) Acetylene Laboratory:

This unit was under the direction of Soviet technician Ryabkov, but he worked there only part of the time. Dr Dieter von der Horst, a chemist, was the only German working there. [redacted] 25X1
was a very small laboratory in which few measuring instruments were used. [redacted] an acetylene 25X1
generator, a distillation column and a compressor were located in this laboratory.

(c) Secret Project:

This installation was classified top secret. Only one man, Soviet worker Pitushin from Plant Control, was admitted into this project, [redacted] 25X1
catalyst sectio [redacted] 25X1
25X1 [redacted]

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Security at the Institute

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14. [redacted] at the GIPKh Institute in June 1947 until the end of 1948, the premises were guarded by women. A simple pass was sufficient to gain admission. At the beginning of 1949, when the various laboratories were finally ready to begin more intensive research, supervision became very strict. [redacted] passes were collected at the entrance and checked against a list of the personnel working in the Institute. [redacted]. The female guards were replaced by men in civilian clothes. [redacted] however, that they all wore the same kind of black suits and had pistols under their coats. [redacted] not permitted to carry any sort of papers out of the gate. All Soviet personnel who had been prisoners of war in Germany were withdrawn. [redacted] they were all given menial jobs in less critical places. A high barbed wire fence was erected on the side opposite the Neva River. All of these security measures were, after 1949, strictly enforced.

-end-

ENCLOSURE (A) Overlay of USAF Target Complex Chart of Leningrad Showing GIPKh and KhIMGAS Institutes

ENCLOSURE (B) GIPKh Institute
Part 1 - Layout
Part 2 - Legend

ENCLOSURE (C) Organization Chart of German and Soviet Personnel Employed at GIPKh

ENCLOSURE (D) Sketch of a Chemical Process Performed in Laboratory 601 of the GIPKh Institute

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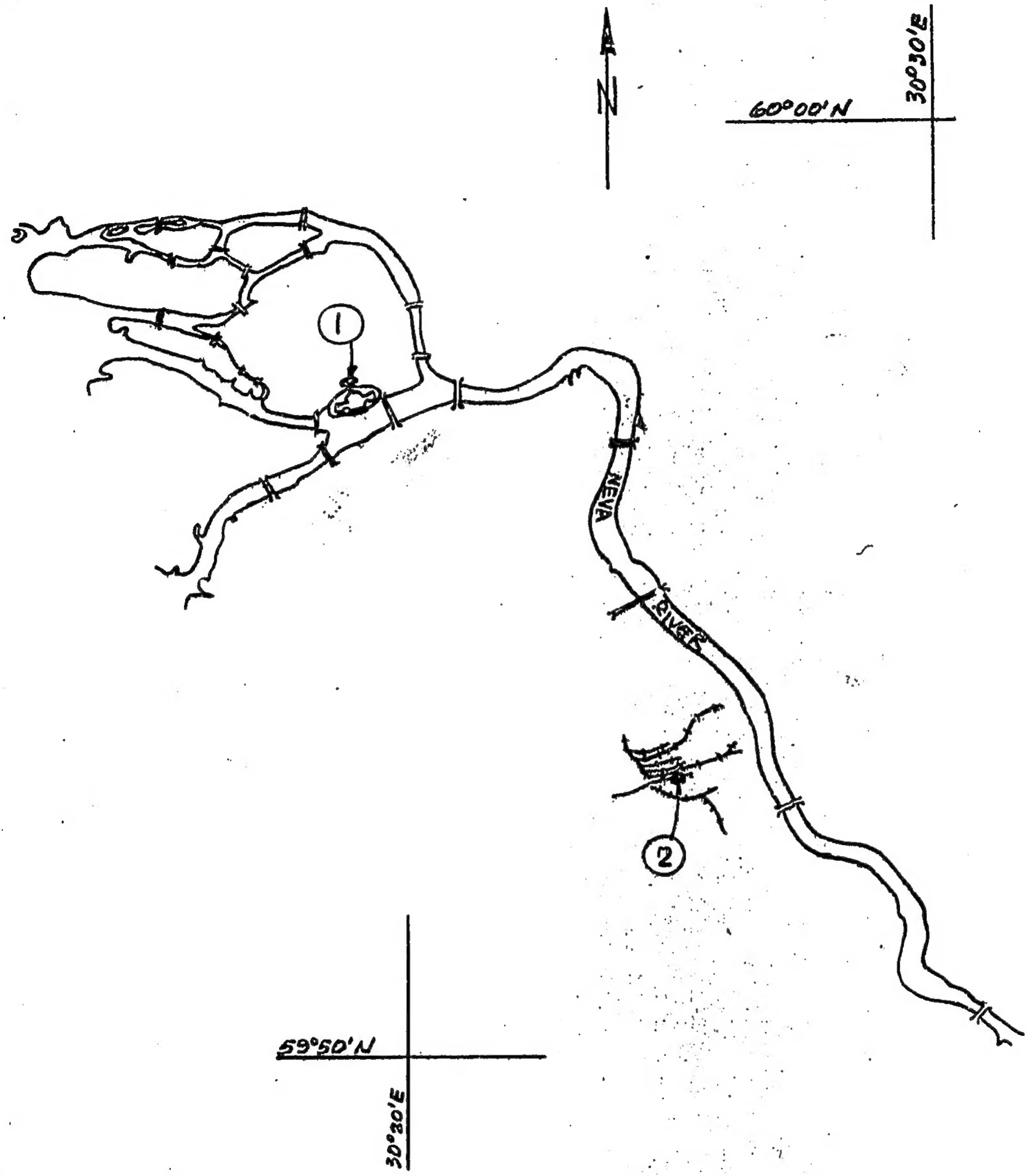
ENCL. A



OVERLAY of USAF TARGET COMPLEX CHART - SERIES 100
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ENCLOSURE (A) Point 1 - GIPKh Institute
Point 2 - KhIMGAS Institute

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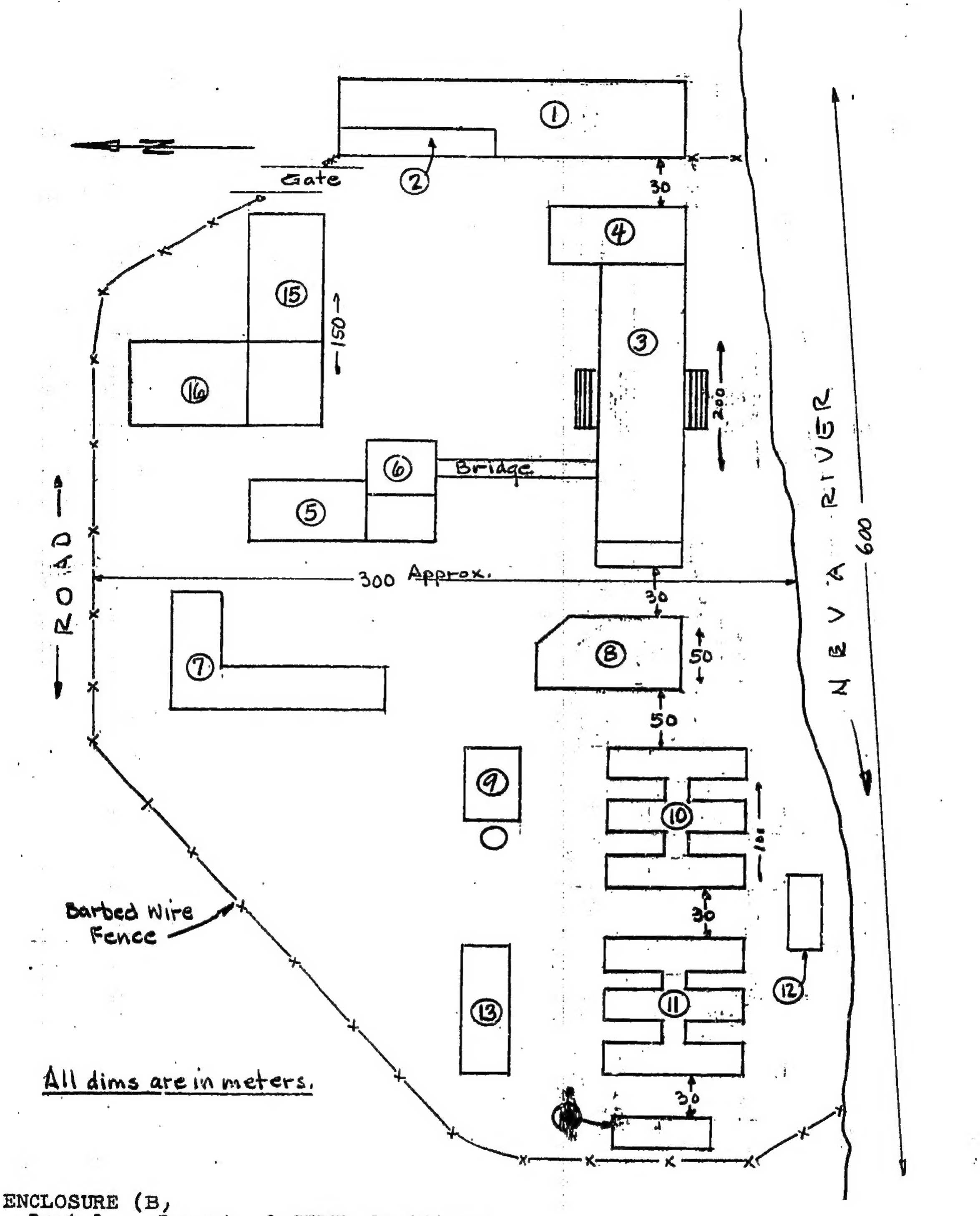
ENCL. B



ENCLOSURE (B,
Part 1 - Layout of GIPKh Institute

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Point 1 Living Quarters for Soviet personnel
Point 2 Dispensary
Point 3 Main Building, containing Soviet laboratories
Point 4 Administration Building
Point 5 Boiler Building I
Point 6 Technical Installation
Point 7 Storage Building
Point 8 "Secret" Technical Installation
Point 9 Boiler Building II
Point 10 Laboratories of German and Soviet scientists
Point 11 Workshops (Electrical and Mechanical)
Point 12 Rocket Fuel Testing Installation
Point 13 Storage Building for electrical equipment
Point 14 Mess Hall
Point 15 Plant Control and Management Department
Point 16 Engineer Drafting and Designing Department

ENCLOSURE (B)
Part 2 - Legend,
Accompanying Part 1, ENCLOSURE (B) - Layout of GIPKh Institute

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ENCL. C

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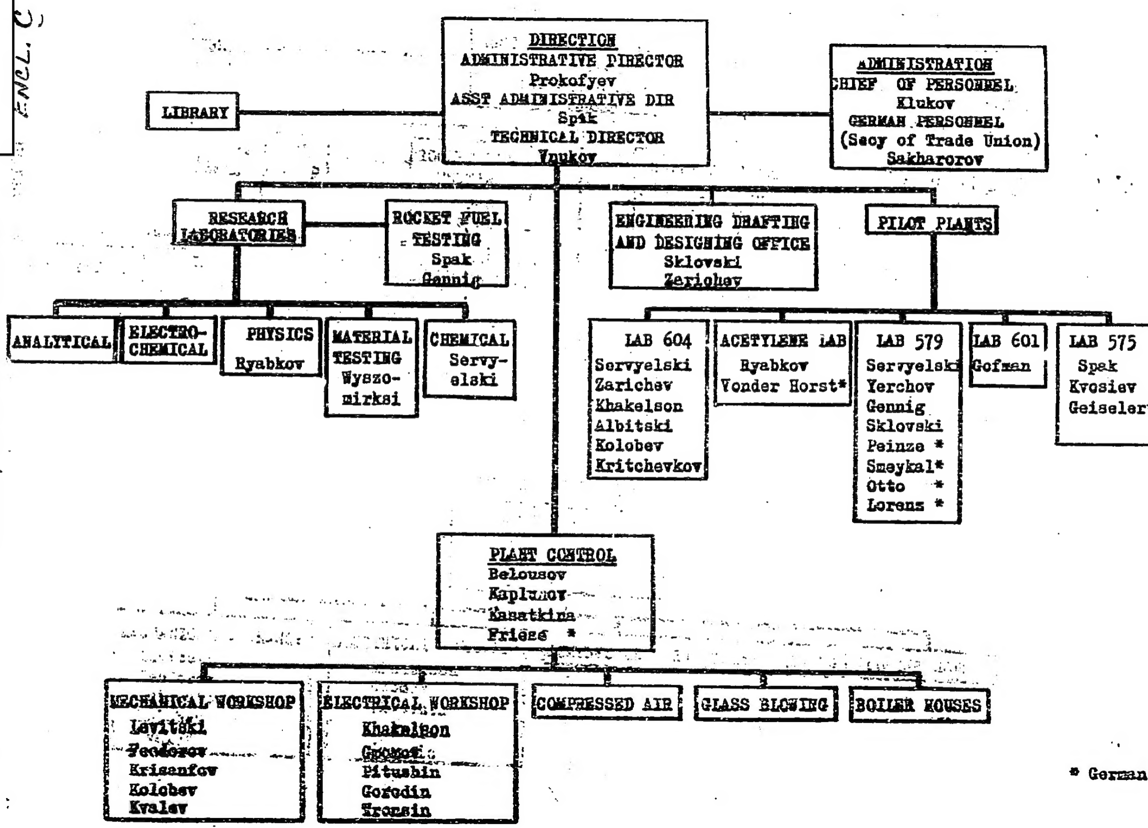

ENCLOSURE (C) Organization Chart of German and Soviet personnel employed at the GIPKh Institute

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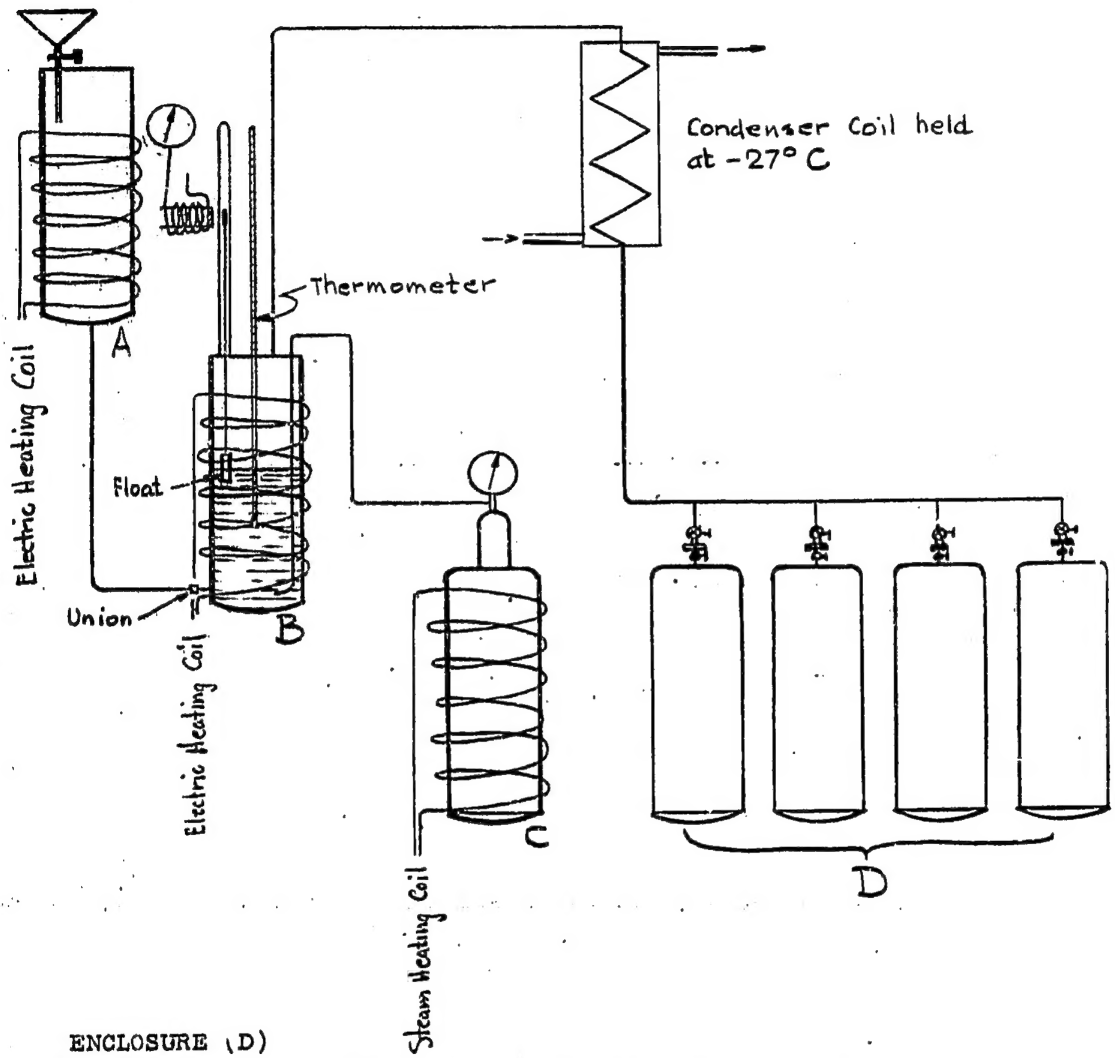
ENCL. D



ENCLOSURE (D)

CHEMICAL PROCESS PERFORMED IN LAB. 601 AT GIPKh INSTITUTE

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